

Notice of Allowability	Application No.	Applicant(s)	
	09/400,755	HARRINGTON, STEVEN J.	
	Examiner	Art Unit	
	Mehrdad Dastouri	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to November 16, 2004.
2. ☒ The allowed claim(s) is/are 2-5, 9-12 and 17 (Renumbered 1-10).
3. ☒ The drawings filed on 11 March 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Patrick R. Roche (Registration No. 29,580) on January 4/6, 2005.

2. The application has been amended as follows:

Claim 7 has been amended as follows:

7. (Currently amended) A method of verifying a projected image within a three-dimensional view plane of an augmented-reality display system as a preselected movable real object ~~comprised of three equidistant line points~~ disposed in three-dimensional free space. whereby the preselected movable real object may be employed as an interface tool for the system, comprising steps of:

identifying a representative characteristic of the preselected movable real object within the three-dimensional view plane, the preselected movable real object is comprised of three equidistant line points disposed in free space, and wherein the representative characteristic comprises shape and location of the preselected movable real object and is exclusive of preselected marked standards and printed identifiers;

determining dimensional aspects of the preselected movable real object from the projected image including the detection of projected dimensions of the three equidistant line points;

computing a corresponding dimensional identity and location of the preselected movable real object at an object point relative to the view plane including calculating X, Y and Z coordinates in real space of the preselected movable real object at the object point based on the projected dimensions of the three equidistant line points in the view plane and known augmented-reality display system geometric dimensions; and

verifying whether the dimensional identity and location are reasonably consistent with predetermined standards for the preselected movable real object.

Claim 5 amended as follows:

5. (Currently amended) The method as defined in claim 7 wherein the verifying includes testing from at least one of the tests of (a) whether the preselected movable real object has expected dimensions or proportions, (b) whether the corners are right angles, (c) whether a center point matches when calculated from distinct sets of the corners, (d) whether the corners are generally within a common plane, and (e) whether the preselected movable real object lies within an expected viewing range.

Claim 11 amended as follows:

11. (Currently amended) A method for identifying a movable real piece of paper disposed in free space in a variable three-dimensional viewing area of an augmented-reality display system comprising steps of:

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identifying ~~an~~ a movable real object at a viewing plane in the three-dimensional viewing area having a characteristic representative of the piece of paper wherein the characteristic is exclusive of preselected registration marks and printed identifiers;

locating a plurality of corners of the movable real object;

calculating a dimensional representation of the movable real object in the viewing plane from the locations of the corners;

unprojecting the dimensional representation to calculate a plurality of the movable real object coordinates representative of a size of the movable real object and a distance of the movable real object from the viewing plane including calculating X, Y and Z coordinates in real space of the movable real object based on dimensions of the movable real object in the viewing plane and display system geometrics; and

comparing the movable real object coordinates with predetermined standards indicative of the piece of paper for verifying the object as the piece of paper.

Claim 17 amended as follows:

17. (Currently amended) The method as defined in claim 11 wherein the unprojecting comprises unprojecting a plurality of dimensional representations of the movable real object attributable to three-dimensional movement of the movable real object in the variable viewing area.

Response to Amendment

3. Applicant's amendment filed November 16, 2004, has been entered and made of record.

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance:

The objected Claims 7 and 11 have been rewritten in independent form including all of the limitations of the base claim and any intervening claims, and are therefore allowable.

Claims 2-5 are amended to depend on Claim 7. Claims 9, 12 and 17 are amended to depend on Claim 11.

Claims 1, 6, 8 and 13-16 have been canceled.

The reason for allowance of Claims 7 and 11 are indicated in Final Office action mailed May 17, 2004.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mehrdad Dastouri
Primary Examiner
Art Unit 2623
January 6, 2005

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri